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Many delegates took part in this debate. Dr. Edson said that the use of water with sulphur dioxide was a point on which he had not touched. Unhappy memories in his experience were connected with this practice. He tried it on 500 pairs of children's trousers. The water made a bleaching powder out of the disinfecting agent, and he had to pay damages on the trousers.

A general impression seemed to prevail, that, while sulphur was of use, it needed to be used with great care and thoroughness. Some delegates favored the substitution of chlorine. In answer to a question, Dr. Edson explained that in New York, when a room was to be disinfected, three pounds of sulphur were used for every thousand cubic feet of air. The sulphur was put on a dish in a tub of water, four ounces of alcohol to every three pounds were poured over it, and the alcohol was ignited.

Dr. John H. Roach of Chicago sent in the following preamble and resolution: "*Whereas Asiatic cholera, leaving its usual restricted bounds, threatens to advance by the same lines that it has followed in the last four epidemics, be it resolved, that the American Public Health Association desires to call renewed attention to this fact, and to urge that quarantine authorities on the Atlantic and Pacific seaboards, and Boards of Health throughout the country, make every effort to prepare for this threatened danger.*" The resolution was at once referred to the executive committee.

In the evening a paper on "Sanitary Entombment," by the Rev. Charles R. Treat of this city, was the first. A carefully written paper on "Do the Sanitary Interests of the United States demand the Acquisition of Cuba?" was read by Dr. Benjamin Lee, secretary of the Pennsylvania State Board of Health. He summarized his conclusions as follows:—

"The exigencies of traffic and travel render rapid and constant communication between the United States and Havana a necessity. Havana is one of the most notorious breeding-places of yellow-fever, and is never free from its presence. The only means by which the germs of this disease can be eradicated are a proper system of sewerage and drainage, which shall deliver the filth of the city at a distant point into the waters of the ocean, and the removal of all the feculent soil. There is no hope that the Spanish Government will ever undertake a work of this magnitude for a dependency.

"The introduction of yellow-fever into the United States through both legitimate and illegal channels of trade must be of frequent occurrence so long as this condition of things continues. A single widespread epidemic of yellow-fever would cost the United States more in money—to say nothing of the grief and misery which it would entail—than the purchase money of Cuba.

"The precautions against the spread of small-pox in Cuba are entirely inadequate, and are rendered ineffective by reason of the superstition of a large proportion of the inhabitants: hence epidemics of that loathsome disease are of frequent occurrence.

"Leprosy prevails in Havana and the island of Cuba to a serious and constantly increasing extent. Leprosy is absolutely unrestricted in this island. While there is an immense and admirably administered leper-hospital in Havana, its inmates go and come among the residents of the city and country at will, until locomotion is rendered impossible by mutilation. The ravages of the disease are confined to no class or race. Leprosy has already obtained a foothold in the United States in the ports nearest to and in most constant communication with the island of Cuba. Leprosy has but one history, that of constant progression unless it is checked by isolation of the most absolute and unrelenting character. No centre of leprosy has ever originated in the United States. The importation of the first case of a series can always be distinctly traced."

A paper on "Railway Sanitation," by Dr. Samuel W. Latta, medical examiner for the Pennsylvania Railroad Voluntary Relief Department, was read, and, after some general discussion, the association adjourned till Friday.

On Friday the first paper read was by D. E. Salmon, D.V.M., chief of the Bureau of Animal Industry, Washington, D.C., upon "The Necessity for a More Rigorous Inspection of Meat-producing Animals at the Time of Slaughter."

Dr. Albert M. Gihon, U.S.N., read a paper on "The Causes of Infant Mortality," prepared by Dr. R. O. Beard, assistant commis-

sioner of health of Minneapolis. The various causes of the deaths of infants were carefully considered, being classified as arising from the bacillus tuberculosis and from nutritional and nervous disorders. For the first class the remedies were to be found in fresh air, disinfection, and the application of heat to all forms of infant food. The prevention of infantile disorders would be greatly promoted by the education of the people in sanitary matters. One of the great mistakes of the present day was to regard infants' stomachs as of a different character from those of adults. The writer said, "How long would the best of us of mature years withstand the terrors of marasmus if we should be confined in one or two close, stove-warmed or furnace heated rooms for an entire winter, without an excuse for ventilation or a sniff of outdoor air; if we were strangers, born and bred, to the taste of pure water or of any water; if we were compelled to be perpetually 'hungry' in order to get any thing to drink; if we revelled in ten or twelve square meals a day, and lunched at pleasure through the live-long night? And yet this is no parody upon the lives of infants in the majority of families in the humbler walks of life, and even among the educated classes. It devolves upon the medical profession, in the face of this prevailing ignorance, to educate the public in the principles of infant hygiene."

The paper further considered the various forms of food for children, and the writer said in conclusion, "The too frequent feeding of infants is a vice almost universally prevalent, and quite generally countenanced, or actually encouraged, by the profession. It is grounded in custom as absurd as the incasement of Chinese infants' feet in permanent baby-shoes. It is entrenched behind that most dangerous of all arguments—the argument from experience—among the ignorant, while it is condemned by every careful observation of the lower orders of animal life, and by every physiological principle bearing upon infancy."

Dr. G. C. Ashmun said that no class of the community needed instruction more in regard to this matter than the medical profession. While so much misinformation upon the subject existed, physicians needed carefully to consider the subject. Dr. Hibbard suggested that in the first twenty-four hours of the life of a child a foundation was laid for a life of health or disease. Health Officer Smith recommended more care in preparing death statistics, and that certificates setting forth debility, marasmus, or heart-failure as the causes of death be returned for correction. Dr. George H. Rohe suggested that all infants' food should be sterilized by boiling for ten or fifteen minutes. He wanted a fuller study of the causes of cholera-infantum. The outcome was the adoption of a motion by Dr. J. H. Raymond for a committee of five to consider the whole subject of mortality among infants, and to report at some future meeting.

Two papers by Edgar Richards, microscopist of the United States Treasury Department,—upon "American Methods of Manufacturing Oleomargarine" and "The Oleomargarine Law of the United States,"—were read by title. Charleston was selected as the place for the next meeting, and the date of meeting will be not earlier than Nov. 1, 1890. The following officers were elected: president, Dr. H. B. Baker of Lansing, Mich.; first vice-president, Dr. Frederic Montizambert of Quebec; second vice-president, Dr. Joseph H. Raymond of Brooklyn; secretary, Dr. Irving N. Watson of Concord, N.H.; treasurer, Dr. J. Berrian Lindsley of Nashville, Tenn.; executive committee, Drs. L. F. Solomon of Louisiana, William Bailey of Kentucky, H. B. Horlbeck of South Carolina, Walter Wyman of Washington, D.C., J. F. Kennedy of Iowa, Peter H. Bryce of Toronto, and the twelve ex-presidents of the association.

The total number of members who have attended the convention is 144. Resolutions of thanks were adopted for the hospitality of Brooklyn, with special thanks to Ex-Health Commissioner Raymond for his work in caring for the association.

#### ELECTRICAL NEWS.

##### A New Ammeter.

PROFESSOR H. J. RYAN of Cornell has invented an ammeter which *The Crank* states to be remarkable for its simplicity and accuracy, and describes as follows. It works on the same principle

as the Thompson electrical balance; but the latter is an expensive instrument, beyond the reach of the ordinary electrical engineer, and is not readily portable.

Professor Ryan's invention, consisting of a method of suspension and the laying-off of a scale, renders the construction of the apparatus a matter of a few hours' labor by any fair mechanic.

As in the Thompson balance, the current passes through two parallel fixed coils, and through a coil swinging between them. In the Thompson balance the current passes into this swinging coil through the suspension, consisting of a great number of fine copper wires, which will conduct a large current, but at the same time offers but little resistance to the movement of the swinging arm. The mounting of these wires is a very laborious operation, which adds greatly to the cost of the machine. Professor Ryan overcomes this difficulty thus. From each end of the axis of the arm a single silk thread extends upward through a hole in the hard-rubber framework above. These holes are drilled at an angle with the vertical, and the threads bearing on their upper acute edges form what is practically a knife-edge suspension. The current is taken into the coil by means of two broad strips of thin silver foil, fastened at one end to the base, at the other to the arm near the axis. This foil is so thin and light that it offers practically no resistance to the swinging arm, but at the same time is capable of carrying a very large current.

The balancing of the coil-bearing arm is accomplished by the movement of an arm carrying a weight and a pointer, and swinging in the horizontal plane. This arm has the greatest moment about the axis of suspension when it is perpendicular to it, and the least when it is parallel to it. In moving from one of the positions to the other, the pointer swings over a quadrant.

The force tending to move the coil, and hence the moment required to balance it, must be proportional to the square of the current. If on a line through the pointer pivot, and perpendicular to the axis of suspension, distances be laid off proportional to the squares of the currents, and perpendiculars be erected at those points, the distances of their intersections with the arc of the quadrant from the axis of suspension will be proportional to the squares of the corresponding currents. If these points be marked with the square roots of their respective distances, the instrument will give direct readings.

**INDICATING TEMPERATURES AT A DISTANCE.**—For many purposes it would be convenient if the temperature indicated by a thermometer, in some situation not easily accessible, could be telegraphed, as it were, to some spot convenient to the observer. Many methods more or less successful have been devised; and M. Morin, a French inventor, as we learn from *Engineering*, has recently patented another method, which, if of a somewhat limited range of applicability, may nevertheless be useful in certain situations. In a few words, his apparatus consists of a thermometer, with a scale about 8 inches long, reading from  $0^{\circ}$  to  $30^{\circ}$  C. The bore of the tube is about .02 of an inch in diameter, and the bulb is constructed to hold about 7 cubic centimetres of mercury. A platinum wire, with a diameter of about .0008 of an inch, runs from one end of the tube to the other, being connected with platinum terminals fused through the glass. The length of wire comprised between the  $0^{\circ}$  and  $30^{\circ}$  marks on the scale has a resistance of 200 ohms. The resistance of the whole thermometer, therefore, will vary considerably as the mercury rises and falls in the tube, and it is on this fact that the arrangements for telegraphing the temperature to a distant point depends. The receiving instrument consists of a low-resistance Deprez-d'Arsonval galvanometer, and an auxiliary resistance of about 200 ohms. Two Leclanché cells of large size connected in parallel, the electromotive force of which is very constant for varying temperatures, are employed to send a current through the thermometer, resistance, and galvanometer; and the deflection of the latter indicates the height of the mercury in the thermometer-tube.

**METAL SHEETS AS ELECTRICAL SCREENS.**—Professor O. Lodge contributed a paper, at the recent meeting of the British Association, "On the Failure of Metal Screens to screen off the Electrostatic Effect of Moving or Varying Charges," which is interesting, inasmuch as Maxwell suggested the bird-cage form as

the best form of lightning-protector. Professor Lodge has found, that, as long as a charge is stationary, the thinnest film of a conductor is indeed a perfect screen. An ordinary wire gauze is also impervious to electric disturbances from without, and so is a silver-coated beaker, as long as the coating is not too thin. This was investigated by placing a very light needle, highly charged with opposite electricities at its ends, within the beaker. When, however, the coating became thinner and thinner, so that the resistance of the silver film increased from a fraction of an ohm to 100 ohms and more, and when the charged bodies were rapidly approached, being shot towards the beaker sometimes, the needle was deflected, the deflections becoming measurable at 1000 ohms' resistance. One may simply say that the protection ceased as soon as the silver film became translucent, as Hertz has observed in his classical researches.

**AUTOMATIC ELECTRIC BALANCE.**—There has been exhibited in Paris an electric balance, the invention of Mr. William Snelgrove. The placing of the object to be weighed in the pan closes an electric circuit. The current along this circuit operates a motor attached to the weight on the beam, causing it to run out on the beam till an equipoise is established, when the circuit is broken. When the pan is cleared, every thing returns to the original condition.

## HEALTH MATTERS.

### Chloroform as an Anæsthetic.

A CONTRIBUTOR to *The Lancet* states that in the medical journals for the last ten years there are reported one hundred and twenty (if not more) cases of death under chloroform. Many of these are very imperfectly described, but in at least forty-nine cases the patients were in good general health at the time of administration, and required an anæsthetic merely for the performance of some minor operation; e.g., extraction of teeth (eleven cases of death), reduction of dislocations (nine cases), eye operations, fistulæ, and so on. In some fifty-nine cases death occurred before the commencement of the operation, and so was clearly due to the chloroform alone. In about twenty of the cases it is noted that chloroform had been successfully given on previous occasions, in one as many as eight different times before the fatal administration. It is evident from the foregoing that chloroform is uncertain in its action; that not only do people die while under chloroform, but also from it; frequently, too, even when it is used by skilful hands. Of course, it is possible to retort that "it was not properly given," which may be correct. This will not alter the fact that these accidents prove chloroform to be a powerful agent, very difficult to administer properly; indeed, so difficult and dangerous that it is scarcely suitable for a routine anæsthetic, when a drug less powerful for evil can replace it.

The nauseous flavor and the sense of suffocation from ether can be entirely done away with by the use of nitrous oxide, and its inhalation made more agreeable than even that of chloroform, while the patient quickly becomes unconscious without the struggling so common with chloroform. The writer goes on to say, "I have not yet found a single patient who has once inhaled ether preceded by nitrous oxide complain of suffocation, or object to take it again on the ground of its unpleasantness."

"The readiness with which chloroform affects the heart, the smallness of a fatal dose, and especially the ease and suddenness with which such a dose can be inhaled, almost by a couple of deep inspirations, will make its safe exhibition always a difficult task to invariably accomplish. Having had many years' experience, I have gradually come to believe chloroform to be a less safe anæsthetic than ether."

### Preventable Blindness.

AT a meeting of the Boston Society for Medical Observation, April 1, 1889, a paper was read by Hasket Derby, M.D., on this subject. We have recently published the report of the Albany committee on the increase in blindness. A certain proportion of this loss of sight is preventable. Being desirous of estimating the relative number of such cases in his own community, Dr. Derby